

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re United States Patent Application of:)	Docket No.: 020884-000014
Applicant(s): Peter Jonathan Bentley et al.)	Examiner: Robinson, Chanceity N.
Application No.: 10/599,657)	Art Unit: 1722
Filing Date: June 13, 2007)	Confirmation No.: 2391
Title: THERMALLY REACTIVE INFRARED ABSORPTION POLYMERS AND THEIR USE IN A HEAT SENSITIVE LITHOGRAPHIC PRINTING PLATE)	Customer No.: 24239

SUBMISSION OF BRIEF ON APPEAL IN U.S. PATENT APPLICATION NO. 10/599,657

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P-0. Box 1450
Alexandria, VA 22313-1450

Sir:

This Brief is submitted on appeal under 35 USC §134 from the Final Rejection in the Office Action dated December 22, 2010, of claims 1-14 of U.S. Patent Application No. 10/599,657. A Notice of Appeal was filed on June 21, 2011. Applicant is submitting this Appeal Brief on August 18, 2011. The appeal brief fee of \$270.00 is being submitted electronically herewith.

Authorization also is hereby given, to charge any additional fee or amount properly payable in connection with the filing of this Appeal Brief, to Deposit Account No. 13-4365 of Moore & Van Allen.

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REAL PARTY IN INTEREST

The real party in interest in this appeal is Ipagsa Industrial, S.L., the owner of the invention and patent rights of this application, by virtue of an Assignment recorded in the assignment records of the U.S. Patent and Trademark Office at reel/frame 019424/0405 on June 13, 2007.

RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to applicant, the applicant's legal representative or assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

STATUS OF CLAIMS

Claims 1-14 are pending in the subject application; and claims 1-14 are rejected.

In the December 22, 2010 Final Office Action, the following rejections were made:

1. claims 1-11 and 13-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen (U.S. Patent Application No. 6,177,182) in view of Bennett (PCT Publication No. WO 02/11984).
2. claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen in view Bennett and in further view of Tao et al. (U.S. Patent No. 6,939,663).

The rejections of record that constitute the subject of this Appeal are the 35 U.S.C. §103 (a) rejections of claims 1-14. A complete listing of the appealed claims 1-14 is provided in the Claims Appendix enclosed herewith.

STATUS OF AMENDMENT

No amendment to the claims was made after receipt of the Final Office Action of December 22, 2010. For purposes of discussing the rejections of the claims under 35 U.S.C. §103(a), claims 1-14 in the Claims Appendix are the same in substance to the form of claims 1-14 to which the December 22, 2010 Final Office Action was directed.

SUMMARY OF CLAIMED SUBJECT MATTER

In the following paragraph, a concise explanation of the subject matter defined in representative claims 1 and 26 is set forth below, with reference to the specification of U.S. Patent Application No. 11/954,344 by page and paragraph numbers, the subject of the present appeal.

Claim 1 A near infrared absorption polymer comprising at least two different pendent infra-red chromophoric moieties covalently bonded to the backbone of an alkali-soluble resin, wherein at least one of the pendent infra-red chromophoric moieties is an indole cyanine dye and the other of which is a benz[e]-indole cyanine dye.	See, page 6, lines 7-10, Claim 1 as filed, Abstract
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GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are to be reviewed in this appeal:

1. Whether claims 1-11 and 13-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen (U.S. Patent Application No. 6,177,182) (hereinafter Nguyen) in view of Bennett (PCT Publication No. WO 02/11984) (hereinafter Bennett).
2. Whether claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen in view Bennett and in further view of Tao et al. (U.S. Patent No. 6,939,663).

ARGUMENT

1. Whether claims 1-11 and 13-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen (U.S. Patent Application No. 6,177,182) (hereinafter Nguyen) in view of Bennett (PCT Publication No. WO 02/11984) (hereinafter Bennett).

Claim 1

Applicants' claim 1 recites:

1. A near infrared absorption polymer comprising at least two different pendent infra-red chromophoric moieties covalently bonded to the backbone of an alkali-soluble resin, wherein at least one of the pendent infra-red chromophoric moieties is an indole cyanine dye and the other of which is a benz[e]-indole cyanine dye.

According to the Office, Nguyen discloses a “thermally reactive infrared absorption polymer comprising an infrared absorption chromophoric moiety comprising derivatives including indole cyanine dye and benz[e]-indole cyanine dye, which is bonded to the backbone of an alkali-soluble phenolic resin” (see, the December 22, 2010 Office Action, page 3, lines 1-4). As admitted by the Office, “Nguyen does not disclose the infrared chromophoric moiety is an indole cyanine dye combined with a benz[e]-indole cyanine dye. However, Bennett et al. disclose a near infrared absorption polymer . . . comprising more than [sic] cyanine dyes . . . that are covalently bonded to the polymer (page 9, lines 2-3)” (see, the December 22, 2010 Office Action, page 3, lines 16-20).

Applicants do not agree that Bennett cures the deficiencies of Nguyen because the cyanine dyes of Bennett are not taught to be covalently bonded to the polymer. Moreover, neither Nguyen nor Bennett teach or suggest the covalent bonding of at least two different pendent infra-red chromophoric moieties, wherein at least one of the pendent infra-red chromophoric moieties is an indole cyanine dye and the other of which is a benz[e]-indole cyanine dye, as claimed by applicants herein.

As required by MPEP §§ 2111 and 2141.02, the Office must ascertain the differences between the claimed invention and the prior art, and must consider both the invention and the prior art as a whole. *W.L. Gore & Associates, Inc., v. Garlock, Inc.*, 220 U.S.P.Q. 303 (Fed. Cir. 1993), *cert. denied*, 469 U.S.

851 (1984). Thus, even in light of the *KSR* decision, the Office must consider the inventions of any cited references in their respective entireties. Certain individual features from the references may not be arbitrarily chosen (while equally arbitrarily discarding other disclosed features) to merely lump together disparate features of different references as a mosaic in an attempt to meet the features of the rejected claims. Respectfully, applicants contend that the Office is misinterpreting Bennett and arbitrarily piecing teachings together that are contrary to Bennett as a whole in an attempt to establish a *prima facie* case of obviousness.

Bennett relates to a coating comprising a composition including a hydroxyl group-containing polymer. Optional components in the Bennett composition include modifying means (see, Bennett, page 5, lines 24-27) and additional radiation absorbing compounds (see, Bennett, page 14, lines 23-27). Each will be discussed individually hereinbelow.

Modifying Means

Importantly, with regards to the modifying means, Bennett recites at page 5, lines 24-29:

A preferred composition includes a modifying means effective to alter the dissolution rate of the composition in a developer, in unheated regions, in heated regions, or both in comparison with a corresponding composition not having such modifying means. The modifying means may be covalently bonded to the hydroxyl group-containing polymer. Alternatively it may be a compound which is not covalently bonded to the hydroxyl group-containing polymer.

In other words, some modifying means will be covalently bonded to the hydroxyl group-containing polymer, while others will not be covalently bonded to the hydroxyl group-containing polymer. This is shown schematically in the Evidence Appendix, whereby the schematic was submitted in the Response to the June 23, 2009 Office Action as submitted on November 23, 2009.

Bennett initially discloses the modifying means **not** covalently bonded to the polymer (see, Bennett, page 6, line 1 through page 7, line 25, as reproduced *in toto* hereinbelow for ease of reference), whereby the modifying means **not** covalently bonded to the polymer are referred to as “reversible insolubiliser compounds.”

The modifying means may comprise a compound which is not covalently bonded to the polymer but which acts to inhibit the dissolution in an aqueous developer of the coating; such inhibition being reduced or entirely removed by the action of heat. Such a compound is hereinafter referred to as a "reversible insolubiliser compound".

modifying means not covalently bonded referred to as "reversible insolubiliser compound."

A large number of reversible insolubiliser compounds have been located.

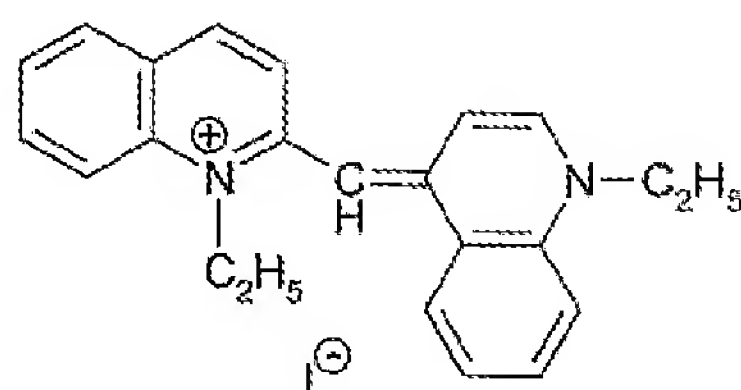
A useful class of reversible insolubiliser compounds are nitrogen containing compounds wherein at least one nitrogen atom is either quaternized or incorporated in a heterocyclic ring, or both quaternized and incorporated in a heterocyclic ring.

Examples of useful quaternized nitrogen containing compounds are triaryl methane dyes such as Crystal Violet (CI basic violet 3) and Ethyl Violet and tetraalkyl ammonium compounds such as Cetrimide.

More preferably the reversible insolubiliser compound is a nitrogen-containing heterocyclic compound. Examples of suitable nitrogen-containing heterocyclic compounds are quinoline and triazols, such as 1,2,4-triazol.

Most preferably the reversible insolubiliser compound is a quaternized heterocyclic compound. Examples of suitable quaternized heterocyclic compounds are imidazoline compounds, such as Monazoline C, Monazoline O, Monazoline CY and Monazoline T all of which are manufactured by Mona Industries, quinolinium compounds, such 1-ethyl-2-methyl quinolinium iodide and 1-ethyl-4-methyl quinolinium iodide, and benzothiazolium compounds, such as 3-ethyl-2-methyl benzothiazolium iodide, and pyridinium compounds, such as cetyl pyridinium bromide, ethyl viologen dibromide and fluoropyridinium tetrafluoroborate.

Usefully the quinolinium or benzothiazolium compounds are cationic cyanine dyes, such as Quinoldine Blue and 3-ethyl-2-[3-(3-ethyl-2(3H)-benzothiazolylidene)-2-methyl-1-propenyl] benzothiazolium iodide, and the compound of formula



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Bennett, page 6, lines 1-26 (emphasis added)

A further useful class of reversible insolubiliser compounds are carbonyl functional group containing compounds. Examples of suitable carbonyl containing compounds are -naphthoflavone, -naphthoflavone, 2,3-diphenyl-1-indeneone, flavone, flavanone, xanthone, benzophenone, N-(4-bromobutyl)phthalimide and phenanthrenequinone.

The reversible insolubiliser compound may be a compound of general formula



where Q_1 represents an optionally substituted phenyl or alkyl group, q represents 0, 1 or 2, and Q_2 represents a halogen atom or any alkoxy group. Preferably Q_1 represents a C_{1-4} alkyl phenyl group, for example a tolyl group, or a C_{1-4} alkyl group. Preferably q represents 1 or, especially, 2. Preferably Q_2 represents a chlorine atom or a C_{1-4} alkoxy group, especially an ethoxy group.

Another useful reversible insolubiliser compound is acridine orange base (CI solvent orange 15). Other useful reversible insolubiliser compounds are ferrocenium compounds, such as ferrocenium hexafluorophosphate.

Although it is possible for a reversible insolubiliser compound to be in a separate layer from the composition comprising the polymer, for example a barrier layer preventing the developer from contacting the composition, preferably it is incorporated by admixture in the composition. Suitably, in such embodiments, the reversible insolubiliser compound constitutes at least 1%, preferably at least 2%, preferably up to 15%, more preferably up to 25% of the total weight of the composition. Thus a preferred weight range for the reversible insolubiliser compound may be expressed as 1-15% of the total weight of the composition.

There may be more than one reversible insolubilizer compound. References herein to the proportion of such compound(s) are to their total content.

} reversible insolubiliser compound in separate layer or admixed

Bennett, page 7, lines 1-25 (emphasis added)

It can be seen that cyanine dyes are listed as reversible insolubilizer compounds (i.e., **not** covalently bonded) at page 6, line 24.

Subsequent to the recitation of the non-covalently bonded “reversible insolubilizer compound” modifying means, Bennett introduces the modifying means that are covalently bonded to the hydroxyl-group containing polymer and are said to have a “reversible insolubilization effect.” See, Bennett, page 7, line 28 through page 9, line 3, reproduced hereinbelow for ease of reference.

30	Alternatively the modifying means may comprise functional groups Q, also providing a reversible insolubilization <u>effect</u> , wherein <u>groups Q are bonded to the hydroxyl group-containing polymer</u> , preferably via hydroxyl groups thereof, but such	}	modifying means covalently bonded to polymer provide a reversible insolubilization <u>effect</u>
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Bennett, page 7, lines 28-30 (emphasis added)

that the polymer retains hydroxyl groups. Thus, preferably, the functional groups Q may covalently bond to the polymeric substance through reaction with hydroxyl groups thereof, but not all of the hydroxy groups are thereby reacted.

Preferably the ratio of functional groups Q in the functionalized polymeric substance to hydroxy groups in the corresponding unfunctionalized polymeric substance is in the range 1:100 to 1:2. More preferably the functional group ratio is in the range 1:50 to 1:3. Most preferably the functional group ratio is in the range 1:20 to 1:6.

A suitable functionalized polymer may be defined by the formula $R(OH)_m(Q)_n$ where R is the polymer chain and $(Q)_n$ represents functional groups bonded thereto, and Q represents a moiety which can hydrogen bond to the polymer chain R of the same molecule or an adjacent molecule or molecules. Symbols n and m represent plural integers.

Especially preferred groups Q include -O-SO₂-tolyl, -O-dansyl, -O-SO₂-thienyl, or -O-SO₂-naphthyl and -O-CO-Ph. In general it is preferred that bonding to the -O- residue is by a sulfonyl or carbonyl group.

Further information on functionalized polymers of the type just described, and on their use in printing forms, is given in WO 99/01795, and the contents of that specification are incorporated in this specification by reference.

Alternatively or additionally the modifying means may comprise diazide moieties. Diazide moieties preferably comprise diazo groups =N₂ conjugated to carbonyl groups, preferably via an aromatic or heteroaromatic ring. In such moieties a carbonyl group is preferably bonded to the aromatic or heteroaromatic ring at an adjacent ring position to the diazo group. Preferred moieties are o-benzoquinonediazide (BQD) moieties and, especially, o-naphthoquinonediazide (NQD) moieties.

A BQD moiety may, for example, comprise the 1,4- or, preferably 1,2-benzoquinonediazide moiety.

An NQD moiety may, for example, comprise the 1,4-, 2,1- or, most preferably, the 1,2-naphthoquinone diazide moiety.

The diazide moieties may be present as compounds admixed with the polymer or, as is preferred, as moieties covalently bonded to the polymer. It should be noted

Bennett, page 8, lines 1-32 (emphasis added)

that hydroxyl groups will still be present on the polymer, and further moieties may additionally be covalently bonded to the polymer; for example moieties Q, as previously described.

Bennett, page 9, lines 1-3

Importantly, the only compounds that are disclosed in Bennett as being able to be covalently bonded to the hydroxyl group-containing polymer are the modifying means comprising functional groups Q, wherein Q is defined as including -O-SO₂-tolyl, -O-dansyl, -O-SO₂-thienyl, or -O-SO₂-naphthyl and -O-CO-Ph (see, e.g., Bennett, page 7, line 28 through page 8, line 16) or the modifying means comprising diazide moieties (see, e.g., Bennett, page 8, line 20 through page 9, line 3).

In summary, the compounds in Bennett that are covalently bonded to the polymer have a reversible insolubilization effect and include the Q functional groups and/or diazide moieties. The compounds in Bennett that are not covalently bonded are also termed “reversible insolubiliser compounds” and include nitrogen-containing heterocyclic compounds, quaternized nitrogen-containing compounds, carbonyl functional group containing compounds, compounds having the general formula Q₁-S(O)_q-Q₂, acridine orange base, and ferrocenium compounds.

Radiation Absorbing Compound

In order to use electromagnetic radiation to heat the coatings, a radiation absorbing compound capable of absorbing the incident electromagnetic radiation (and charged particle radiation) and converting it to heat can be added to the Bennett composition (see, Bennett, page 14, lines 23-28). The radiation absorbing compounds are either present in a separate layer or admixed in the composition, as described below.

“In certain embodiments of the invention a separate layer comprising a radiation absorbing compound can be used. This multiple layer construction can provide routes to high sensitivity as larger quantities of absorber can be used without affecting the function of the image forming layer. In principle any radiation absorbing material which absorbs sufficiently strongly in the desired band can be incorporated or fabricated in a uniform coating. Dyes, metals and pigments (including metal oxides) may be used in the form of vapor deposited layers.

* * *

Preferably, however, the radiation absorbing compound is incorporated by admixture in the composition.” (emphasis added)

Preferably, the radiation absorbing compound is an organic pigment or dye (see, Bennett, page 15, lines 29-30). With regards to pigments and dyes, Bennett recites at page 16, lines 9-23:

Pigments are generally insoluble in the compositions and so comprise particles therein (unless provided as a separate layer of a coating). Generally they are broad band absorbers, preferably able efficiently to absorb electromagnetic radiation and convert it to heat over a range of wavelengths exceeding 200 nm, preferably exceeding 400 nm. Generally they are not decomposed by the radiation. Generally they have no or insignificant effect on the solubility of the unheated coating, in the developer. In contrast dyes are generally dissolved in the compositions (unless provided as a separate layer of a coating). Generally they are narrow band absorbers, typically able efficiently to absorb electromagnetic radiation and convert it to heat only over a range of wavelengths typically not exceeding 100 nm, and so have to be selected having regard to the wavelength of the radiation which is to be used for imaging.

(emphasis added)

In other words, the dyes, when present, are dissolved in the composition (unless provided as a separate layer of a coating). No covalent bonding of the dyes to the hydroxyl group-containing polymer will occur.

The cyanine dye teaching of Bennett

As introduced hereinabove, the Office recited:

“Bennett et al. disclose a near infrared absorption polymer . . . comprising more than cyanine dyes . . . that are covalently bonded to the polymer (page 9, lines 2-3)” (see, the December 22, 2010 Office Action, page 3, lines 17-20).

As reproduced hereinabove, Bennett, page 9, lines 2-3, which the Office cites as supporting the conclusion that the cyanine dyes are covalently bonded to the polymer, recites:

“[The diazide moieties may be present as compounds admixed with the polymer or, as is preferred, as moieties covalently bonded to the polymer. It should be noted that hydroxyl groups will still be present on the polymer, and further moieties] may additionally be covalently bonded to the polymer; for example moieties Q, as previously described.” (emphasis added)

Read in context, the portion of Bennett cited by the Office to support the conclusion that the cyanine dyes are covalently bonded to the polymer actually states that the polymer can include both diazide and further moieties such as Q covalently bonded to the polymer, neither of which are or can be extrapolated to include cyanine dyes.

Notably, in the “Response to Arguments” in the December 22, 2010 Office Action, the Office recited:

“Examiner agrees with the applicant that functional groups Q and/or diazide moieties are covalently bonded to the hydroxyl group; however, these functional groups and/or diazide moieties are reversible insolubilizer compounds. See pages 6, line 6 – page 4, line 11.” (see, the December 22, 2010 Office Action, page 7, lines 12-14) (emphasis added)

Applicants disagree with the Office’s interpretation of Bennett. Bennett does **not** teach that the functional groups and/or diazide moieties that are covalently bonded to the polymer are reversible insolubilizer compounds. Referring to page 7, line 29 of Bennett reproduced hereinabove, the Office’s attention is drawn to the fact that the modifying means that are covalently bonded have a reversible insolubilization **effect** – they are not reversible insolubilization **compounds** *per se* (compare, Bennett, page 7, line 29 with Bennett, page 6, lines 1-5). Bennett very clearly defines that the “reversible insolubiliser compound” is a compound “which is not covalently bonded to the polymer but which acts to inhibit the dissolution in an aqueous developer of the coating” See, Bennett, page 6, lines 1-5. It is unclear how Bennett can define the reversible insolubilizer compound as being “not covalently bonded to the polymer” but the Office continues to insist that the modifying means that are covalently bonded to the polymer are also reversible insolubilizer compounds. These are mutually exclusive teachings. In short, the functional groups and/or diazide moieties that are covalently bonded to the hydroxyl group are **not** reversible insolubilizer compounds *per se*, but rather have a reversible insolubilization effect.

This is a very subtle, but important, teaching in Bennett – the difference between the reversible insolubilization compounds (not covalently bonded) and those compounds that demonstrate a reversible insolubilization effect (are covalently bonded). The former includes cyanine dyes; the latter does not.

Further, the Office recited in the Response to Arguments in the December 22, 2010 Office Action:

“The examiner notes the cyanine dyes of Bennett can function as an absorber compound and/or a reversible insoluble compound. Therefore, examiner notes when the cyanine dye functions as a reversible insolubilizer compound it can be covalently bonded to the hydroxyl group-containing polymer as claimed by claim 1 of the instant application.” (see, the December 22, 2010 Office Action, page 7, lines 15-18) (emphasis added)

Admittedly, Bennett recites at page 18, lines 1-5:

As indicated above precursors of the invention may employ one or more radiation absorbing compounds and one or more reversible insolubiliser compounds. Certain compounds are available which perform both functions. Notable among these are the cyanine dyes, which are preferred herein as radiation absorbing compounds and/or reversible insolubiliser compounds.

As introduced above, Bennett discloses that the “radiation absorbing compounds” are either in a separate layer or alternatively, admixed with the composition including the hydroxyl group-containing polymer. In other words, a radiation absorbing compound is not covalently bonded to the hydroxyl group-containing polymer. Further, as discussed at length hereinabove, the reversible insolubiliser compounds are not covalently bonded to the hydroxyl group-containing polymer either. See, Bennett, page 6, lines 1-5 (“The modifying means may comprise a compound which is not covalently bonded to the polymer . . . Such a compound is hereafter referred to as a ‘reversible insolubiliser compound’.”). As such, the Office’s conclusion that “the cyanine dye functions as a reversible insoluble compound it can be covalently bonded to the hydroxyl-containing polymer as claimed by claim 1 of the instant application,” is not correct.

Summary of Bennett Teaching and Proposed Combination with Nguyen

Bennett discloses that cyanine dyes can be “radiation absorbing compounds and/or reversible insolubiliser compounds.” That said, contrary to the Examiner’s contentions, Bennett does **not** teach that reversible insolubiliser compounds and/or radiation absorbing compounds are covalently bonded to the polymer. Only the Q moieties and/or the diazide moieties can be covalently bonded to the polymer, neither of which include cyanine dyes. Any contention that the cyanine dyes of Bennett can be covalently bonded to the polymer, per the Bennett teaching, is wholly incorrect and a misinterpretation of Bennett. Since Bennett does not teach that the reversible insolubilization compounds can be covalently bonded to the polymer, the Examiner has failed to establish a *prima facie* case of obviousness.

Moreover, as admitted by the Office, “Nguyen does not disclose the infrared chromophoric moiety is an indole cyanine dye combined with a benz[e]-indole cyanine dye” (see, the December 22, 2010 Office Action, page 3, lines 16-17). Without acquiescing to the Office’s position regarding Bennett, even if Bennett were to teach that cyanine compounds can be covalently bonded to the polymer (which it does not), Bennett does not cure the deficiencies of Nguyen. Bennett describes a number of radiation

absorbing compounds including phthalocyanine pigment, squarylium, merocyanine, cyanine, indolizine, pyrylium or metal dithioline classes (see, Bennett, page 15, lines 26-31). Notably, with regards to the radiation absorbing compounds, applicants reiterate that Bennett prefaces the enumeration of radiation absorbing compounds by reciting that they are present in a separate layer (see, Bennett, page 15, lines 16-17) or incorporated by admixture (see, Bennett, page 15, lines 24-25). Further, since “cyanine” is a generic synthetic dye family comprising three different sub-genuses (streptocyanine, hemicyanine and closed-chain cyanine) and hence a large number of possible species, there are much more than a finite number of possible combinations of radiation absorbing compounds in Bennett. In such circumstances, wherein metaphorical darts at a board filled with combinatorial prior art possibilities, courts should not succumb to hindsight claims of obviousness. The inverse of this proposition is succinctly encapsulated by the Supreme Court's statement in *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007), that where a skilled artisan merely pursues “known options” from a “finite number of identified, predictable solutions,” obviousness under §103 arises. Notably, the large number of possible radiation absorbing compounds disclosed in Bennett would never be considered as a finite number of choices.

Applicants surprisingly discovered that the precursor was more stabilized when both an indole cyanine dye and a benz[e]-indole cyanine dye were attached to a polymer. As described by applicants in the instant application, it is thought that this surprising effect in the stabilization of the precursor is given by the improved steric hindrance provided by the two covalently bound chromophores of different molecular structures, thereby causing a more stable matrix which is able to resist unwanted penetration and dissolution of the unexposed areas by the developer (see, the instant specification, page 7, lines 25-29). There is no reason why the skilled artisan considering Bennett would recognize that the attachment of **both** an indole cyanine dye and a benz[e]-indole cyanine dye to a polymer would result in a more stabilized precursor. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007). That which is unknown cannot be obvious.

According to the Office, it would be obvious to combine Nguyen and Bennett because “Bennett et al. teach that the infrared absorbing compounds aids in providing improvement to sensitivity of the coating and its mechanical robustness” (see, the December 22, 2010 Office Action, page 3, lines 20-22). The improved properties of the precursor in Bennett are achieved by using a composition including a hydroxyl group-containing polymer, wherein the weight of said composition is less than 1.1 gm⁻². Therefore, the technical effect provided by the coating composition disclosed by Bennett depends on the use of a low weight coating but cannot include both an indole cyanine dye and a benz[e]-indole cyanine dye attached to the hydroxyl group-containing polymer (see, e.g., Bennett, abstract). The weight of the polymer when

both an indole cyanine dye **and** a benz[e]-indole cyanine dye are covalently attached to the polymer would be greater.

In fact, Bennett teaches away from applicants' claimed invention. Bennett teaches that absorbing dyes are narrow band absorbers and have to be selected having regard to the wavelength of the radiator which is to be used for imaging (see, Bennett, page 16, lines 15-20). It is commonly known that indole cyanine dyes absorb in the range 750-790 nm whilst benz[e]indole cyanine dyes absorb in the range 800-850 nm. Therefore the addition of indole cyanine dyes to a composition already containing benz[e]indole cyanine dyes would not be expected to improve the sensitivity of the precursor when the laser emits for example at a wavelength of 830 nm since one of the dyes would not be absorbing (see, Bennett, page 15, line 13). In fact, it would be expected, by a person having ordinary skill in the art, to have the opposite effect because, as is known in the art and as taught by Bennett, cyanine dyes can also act as "reverse insolubilizer compounds" and the addition of an indole cyanine dye not absorbing, or not absorbing significantly, at the wavelength of emission of the laser would mainly act to decrease the sensitivity of the precursor (see, Bennett, page 18, lines 2-5).

Accordingly, any conclusion that Bennett cure the deficiencies of Nguyen and together they teach the **specific** pendent attachment of an indole cyanine dye **and** a benz[e]-indole cyanine dye to a polymer amounts to hindsight reconstruction, which is legally impermissible. Only with hindsight and knowledge of the invention can someone select isolated and unrelated embodiments of these references and combine them to arrive at something close to the claimed invention.

Accordingly, withdrawal of the rejection of claims 1-11 and 13-15 as being unpatentable over Nguyen in view of Bennett is respectfully requested.

2. Whether claim 12 was rejected under 35 U.S.C. §103(a) as being unpatentable over Nguyen in view Bennett and in further view of Tao et al. (U.S. Patent No. 6,939,663).

As introduced hereinabove, the disclosure of Nguyen in view of Bennett does not suggest the near infrared absorption polymer defined by the claimed invention. Tao does not cure these deficiencies. Specifically, Tao does not motivate, teach or suggest a near infrared absorption polymer comprising at least two different pendent infra-red chromophoric moieties covalently bonded to the backbone of an alkali-soluble resin, wherein at least one of the pendent infra-red chromophoric moieties is an indole cyanine dye and the other of which is a benz[e]-indole cyanine dye. In fact, Tao is solely concerned with

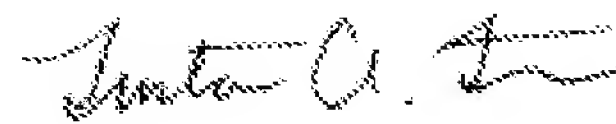
water soluble novolaks and their use in negative working and on-press developable plate precursors (therefore no alkaline development needed). Thus, the plate precursors of Tao are of a totally different technology to either Bennett or the present application.

Accordingly, there is no reason for one skilled in the art considering the three cited references to go in the direction of applicants' invention and as such, claim 12 is not obvious in view of the same. Withdrawal of the obviousness rejection of claim 12 is respectfully requested.

CONCLUSION

For the reasons presented above, the rejections of claims 1-14 under 35 USC §103(a) should be reversed, in view of the patentable character of the subject matter of applicant's claims. The Office's rejections have all been predicated on speculative construction of references that do not provide motivation to be so combined. Accordingly, no basis of *prima facie* obviousness of applicant's claimed invention is presented by the references variously asserted by the Office. The Board is correspondingly requested to reverse all of the Office's rejections of claims 1-14 herein appealed.

Respectfully submitted,



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Appendices:

Claims Appendix [3 pages]

Evidence Appendix [1 page]

Related Proceedings Appendix [1 page]

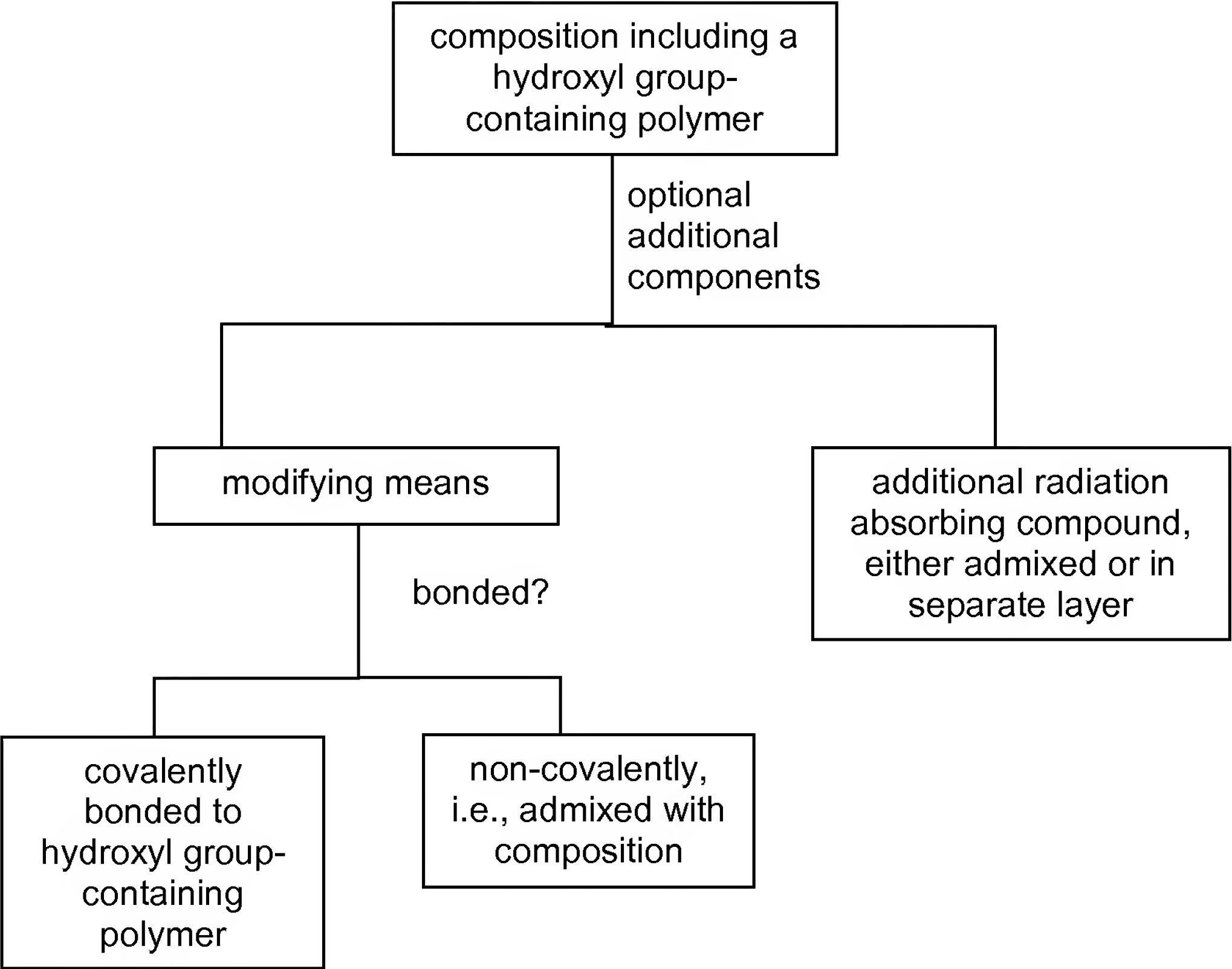
CLAIMS APPENDIX

1. (Previously Presented) A near infrared absorption polymer comprising at least two different pendent infra-red chromophoric moieties covalently bonded to the backbone of an alkali-soluble resin, wherein at least one of the pendent infra-red chromophoric moieties is an indole cyanine dye and the other of which is a benz[e]-indole cyanine dye.
2. (Previously Presented) A near infrared absorption polymer as defined in claim 1, characterized in that the resin is an alkali soluble phenolic resin.
3. (Previously Presented) A near infrared absorption polymer as defined in claim 1, characterized in that the indole cyanine dye is selected from the group consisting of
1-Butyl-2-(2-[3-[2-(1-butyl-3,3-dimethyl-1,3-dihydro-indol-2-ylidene)-ethylidene]-2-chloro-cyclohex-1-enyl]-vinyl)-3,3-dimethyl-3H-indolium hexafluorophosphate,
2-[2-[2-Chloro-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclopenten-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium chloride, or
2-[2-[2-Chloro-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indol-2-ylidene)-ethylidene]-1-cyclopenten-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indolium 4-methylbenzenesulfonate
and other salts thereof.
4. (Previously Presented) A near infrared absorption polymer as defined in claim 1, characterized in that the benz [e]-indole cyanine dye is selected from the group consisting of
2-[2-[2-Chloro-3-[2-(3-ethyl-1,3-dihydro-1,1-dimethyl-2H-benzo[e]indol-2-ylidene)-ethylidene]-1-cyclohexen-1-yl]-ethenyl]-3-ethyl-1,1-dimethyl-1H-benzo[e]indolium tetrafluoroborate, or
3-Butyl-2-(2-[3-[2-(3-butyl-1,1-dimethyl-1,3-dihydro-benzo[e]indol-2-ylidene)-ethylidene]-2-chloro-cyclohex-1-enyl]-vinyl)-1,1-dimethyl-1H-benzo[e]indolium hexafluorophosphate, and other salts thereof.
5. (Previously Presented) A near infrared absorption polymer as defined in claim 1, characterized in that the number ratio of indole cyanine dye to benz [e]-indole cyanine dye is comprised in the range of 1:1 to 1:5.

6. (Original) A near infrared absorption polymer as defined in claim 5, characterized in that the number ratio of indole cyanine dye to benz [e]-indole cyanine dye is about 1:1.
7. (Previously Presented) A near infrared absorption polymer as defined in claim 1, characterized in that the number ratio of total pendent IR chromophoric moieties relative to the parent alkali-soluble resin is comprised in the range from 1:50 to 1:3.
8. (Previously Presented) A heat sensitive positive working lithographic printing plate precursor comprising a substrate and a layer coated thereon, wherein the layer comprises the near infrared absorption polymer as defined in claim 1.
9. (Previously Presented) A heat sensitive positive working lithographic printing plate precursor as defined in claim 8 wherein a dry coat weight of the coating layer comprising the near infrared absorption polymer is in the range 1.4-1.9 g/m².
10. (Previously Presented) A process of manufacture of a heat sensitive positive working lithographic printing plate precursor, said process comprising:
 - a) applying to a substrate a composition in a solvent wherein the composition comprises a near infrared absorption polymer as defined in claim 1 to form a coated substrate; and
 - b) drying the coated substrate to produce the plate precursor.
11. (Previously Presented) A method of producing a printing form from a heat sensitive positive working lithographic printing plate precursor, said method comprising: a) imagewise exposing a printing plate precursor as defined in claim 8 with a near-infrared laser emitting at between 780 nm and 850 nm; and b) developing the precursor in a developing solution to remove the exposed areas.
12. (Previously Presented) A near infrared absorption polymer as defined in claim 1, characterized in that the resin is a novolak resin.
13. (Previously Presented) A near infrared absorption polymer as defined in claim 1, characterized in that the number ratio of indole cyanine dye to benz [e]-indole cyanine dye is comprised in the range of 1:1 to 1:2.

14. (Previously Presented) A near infrared absorption polymer as defined in claim 1, characterized in that the number ratio of total pendent IR chromophoric moieties relative to the parent alkali-soluble resin is comprised in the range from 1:30 to 1:5.

EVIDENCE APPENDIX



RELATED PROCEEDINGS APPENDIX

There exist no other prior or pending appeals, interference or judicial proceedings known to appellant, appellant's attorney, or the assignee which may be related to, direct affect or be directly affected by or have a bearing on the Board's decision in the pending appeal. Accordingly, there exists no decisions rendered by a court of the Board in any related proceedings, such that no related proceedings are identified in this Related Proceedings Appendix.